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Building units of oligosaccharides: CVII. Synthesis of modified oligosaccharides of N-glycoproteins for substrate specificity studies of N-acetylglucosaminyltransferase II.

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ABSTRACT: Several modified derivatives of the tetrasaccharide beta-D-GlcNAc-(1 fwdarw 2)-alpha-D-Man-(1 fwdarw 3)-(alpha-D-Man-(1 fwdarw 6))-beta-D-Man-octyl (1) were synthesized for substrate specificity studies of N-acetylglucosaminyltransferase II (GlcNAcT II). The hydroxyl groups at C-3, C-4 or C-6 of the alpha(1 fwdarw 6)-linked Man residue and the hydroxyl groups at C-3 and C-6 of the alpha(1 fwdarw 3)-linked Man were replaced by deoxy groups. All five tetrasaccharides were synthesized by a block synthesis by using deoxy saccharide residues. The trichloroacetimidate method was particularly successful for synthesizing the glycosidic linkages. The modified compounds have been tested as substrates for N-acetylglucosaminyltransferase II (GlcNAcT II) from rat liver. The substrate specificity of GlcNAcT II will be discussed.

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